ANALYSES.

I.—*Preussen's See-Atlas.* Published under the direction of His Excellency Privy Councillor BEUTH. Berlin, 1841-4. Communicated by Captain WASHINGTON, Royal Navy.

EMULATION and rivalry in the arts of war have, happily for the civilization of mankind, given place to more honourable rivalry in the arts of peace, and in science; and of peaceful occupation perhaps there is none of more importance, none that is of more direct practical benefit to our fellow-creatures, than the silent and steady labours of the hydrographer.

The surveys of the coasts and adjacent seas of England, France, Holland, Denmark, and parts of Sweden, Norway, and Russia, have been slowly yet unceasingly going on during the last quarter of a century, and a portion of the results of many of them is published; yet amongst these it would be difficult to select one that for accuracy and completeness of detail and for beauty of execution can surpass the specimen of the Prussian *See-Atlas* which we have now before us.

The great value of an accurate survey of the Baltic to every maritime nation must be manifest to all, but much more so to England, not only since her commercial marine is the main source of the wealth of the country, but also from early associations intimately connected with that sea. Time was when the 'Baltic Trade' and the 'Baltic fleet' were terms 'familiar as household words' to our ears, and a British sailor, independently of other considerations, can never cease to feel a deep, an undying interest in the scene of the earlier exploits of England's cherished hero—Nelson.

Yet, happily, these scenes are now witness of a more honourable strife—a strife in the advancement of science; and although, in the opinion of some, scientific pursuits, and especially in the higher branches of science, may be regarded as more a matter of curiosity than of utility, yet—albeit we may lay ourselves open to Molière's witty remark, "*Vous êtes orfèvre, Monsieur Josse*"—surely it will be conceded that the labours of the surveyor have claim to the epithet of useful; and if, as has been well observed, 'the man who points out in the midst of the ocean a single rock unknown before is a benefactor of the human race,' how much more are they entitled to this praise who furnish the navigator

with an accurate and practical chart of a large portion of a sea so much frequented by shipping of all nations as the Baltic!

The tract of country described in the survey before us is the northern coast of Pomerania and Prussia, comprising nearly the whole extent of the south shore of the Baltic, or 'East Sea' as it is there usually called, from Stralsund and Rügen on the west, to Memel on the east; an extent of about 350 miles, direct distance, including the ports of Stettin, Danzig, Pillau, Königsberg, and Memel; and although a tolerably accurate impression exists, we believe, as to the amount of trade connected with those ports and the Baltic generally, still it may not be without its use, before entering upon the more immediate description of the survey, to place before the reader some statistics on this point, especially as, thanks to the kindness of the Chevalier Hebeler, Prussian Consul-General in London, we have the opportunity of supplying them from authentic sources.

The total number of ships which passed the Sound up and down was—

	Ships.	British Ships.
In the year 1842 . . .	13,957	3520
In the year 1843 . . .	14,947	3518

And in each of the years 1825 and 1827, 5150 British ships.

In 1838 the number of British ships lost within the Baltic was 13 ships of 3043 tons, so that the value of good charts, were it only for the sake of our own interests, is manifest.

The arrivals and sailings of these vessels in 1843 at the chief Prussian ports were as follows:—

	Arrivals.	Sailings.
Pillau and Königsberg . .	1560	1552
Danzig	1468	1450
Memel	733	730
Stettin	1765	1664

Now this amount of traffic, nearly 15,000 vessels yearly, it is to be remembered, is only the external trade of the Baltic; its internal shipping includes the navies of Russia, Prussia, Sweden, and Denmark, and all the international commerce of these several countries, so that it may safely be affirmed that with the exception of the seas immediately surrounding the British Islands, and possibly the sea-board of the empire of China, no portion of the ocean is so much frequented by ships as the Baltic Sea. Of how much greater importance then does an accurate examination of these seas become to all maritime nations!

The basis on which the survey of the southern shore of the Baltic depends is a triangulation carried over the kingdom of

Prussia in the years 1833-9, by the officers of the Prussian Royal Staff Corps; and in order not to lose the advantage of the fixed points and beacons established in the course of the land-survey, the Prussian Government, at the instance of Privy Councillor Beuth, directed the coast-survey to be proceeded with at the same time, and confided its direction to Herr von Bille, Director of the Royal Naval School at Danzig, assisted by Captains Albrecht, Will, and Domcke, with his brother F. Domcke. In the year 1837, in consequence of Von Bille's retirement from the service, the command devolved on Captain Albrecht, who brought the survey to a close in 1838.

The introduction prefixed to the Atlas of views and lighthouses, which forms a part of this work, details very minutely the means placed at the disposal of the surveyors, namely, small vessels and boats; and the method of taking their soundings and fixing their position, either by angles between three fixed objects on shore, or, when the third could not be seen, by an angle and an astronomical bearing; thus very properly trusting nothing to compass bearings, so liable to error, and which, as is well known, deviate variously from the truth according to the direction of the ship's head. The coast-line and the soundings were then laid down on the working scale of $\frac{1}{25000}$ of the scale of nature, or 3 inches to the nautic mile nearly,—and reduced for engraving and published on one-fourth of the above scale, or $\frac{1}{100000}$, or $\frac{8}{10}$ths of an inch to a nautic mile. The soundings extend off shore about 2 German or 8 English miles, and are given in fathoms, except within the 3 fathom line, when they are marked in feet.

In this manner were completed the twenty sheets of coast charts, and two general sailing charts, extending from near Polangen in Curland, a little north of Memel, on the east, to Ribnitz, a few miles to the eastward of Rostock in Mecklenburg, a distance, including the windings of the coast, of 600 geographic miles.

The prevailing feature of this tract of coast is low sandhills and dunes, with occasionally a shingle beach of pebbles of granite, porphyry, and flint, which, near Dobberan, to the westward of Rostock, are heaped up into long low hills or walls, of some extent.

The town of Rostock, with its lofty spire of St. Peter's, 420 feet high, stands on an eminence on the south side of the river Warnow, which here expands to a width of 800 yards, and forms the harbour, having 8 feet of water up to the quays. Its trade is chiefly in corn and wool; and it has 160 vessels belonging to the port. Population, 18,500. The entrance at Warnemünde, at 6 miles' distance, is marked by a light 58 feet above the sea. Hence the coast extends, in a north-eastern direction, 25 miles

to Darrser Ort, a low wooded point, 3¼ miles to the eastward of which lies the Prerow Bank, having only 11 feet water on it. Darrser Ort is the nearest point of Prussia to the coast of Denmark, lying only 20 miles E.S.E. of Giedser Odde, the south extreme of the island of Falster, whence extends, 5 miles, in a south-easterly direction, the dangerous Trindelen reef, marked by a red buoy. The greatest depth between these shores is 13 fathoms, on mud.

From Darrser Ort the coast turns abruptly east, for 20 miles, to the island of Rügen. This, the largest of all the islands belonging to Germany, has an area of about 320 square miles. It is separated from the Continent, to which it is supposed to have been formerly joined, by a shallow strait about one mile wide. The shape of this picturesque island is very irregular, being deeply indented by the sea, which, combined with its internal lakes, forms a number of peninsulas united in the centre. Of these, the most remarkable is Jasmund on the north-east, connected with the main on the south by a long narrow ridge of granite and porphyry boulders, called the Prora. This peninsula is composed of lofty chalk cliffs of most grotesque forms, the highest point, called the Königstuhl, or King's Chair, rising about 550 feet above the sea.* On the north-west Jasmund is joined by a narrow strip of sand (die Schafe) to the peninsula of Wittow, terminating in the promontory of Arkona, marked by a brilliant light at 203 feet above the sea.

Rügen is a fertile island, level to the west, but rising gradually, to the north and north-east, into rugged chalk cliffs. The number of cattle is considerable; the fisheries productive; and water in abundance. The population is 30,000; and they are famed for their hospitality and kindness to shipwrecked sailors. To the honour of the country, several ancient laws are still in force respecting wrecks, which are immediately taken charge of by government officers; and thus the disgraceful scenes, of so common occurrence nearer home, are avoided.

On the south shore of the narrow strait of Gellen, which separates Rügen from the main, are the small ports of Stralsund and Greifswald. Stralsund, conspicuous by its lofty steeple of St. Mary's, is surrounded by water. It has a tolerable and safe harbour, with depth for vessels drawing 15 feet, but of difficult access. Its trade is considerable, and it has 100 vessels belonging to the port; its population, 17,500. Greifswald has 60 vessels, with a population of 8000 persons. On the small island called Greifswalder Oye, at the eastern entrance of the strait, are two

* It is to be regretted that the heights of all the eminences above the sea are not given in the Prussian sailing-charts.

lights, at an elevation of 90 feet above the sea, to mark the channel.

From Arkona to Jershöft, a distance of 108½ geographic miles, the coast forms a bay 3 miles deep, including the ports of Wolgast, Stettin, and Swinemünde. The depth of water in the western half of this bay does not exceed 15 fathoms; in the eastern half it reaches to 30 fathoms. At 18 miles N.N.E. of Swinemünde lies the Oder Bank, an extensive flat of 5 and 6 fathoms, but having in one spot only 17 feet. A little without this bay, and half-way between the islands of Rügen and Bornholm, lies the extremely dangerous shoal called the Adler's Grund, with only 14 feet water; it is distant 33½ miles in an E. ½ S. direction from Arkona light. Mariners should be specially on their guard against these two dangers, which ought to be marked by large beacon-buoys, if not by light vessels.

Stettin, one of the most flourishing commercial towns, and one of the strongest fortresses in the Prussian monarchy, stands on an eminence on the left bank of the Oder. Its population is 35,000; and its trade considerable, 1765 vessels having entered during the year 1843, and 1664 cleared outwards. Ships are built here, and anchors manufactured for all the Prussian marine. Here is also an observatory and a school of navigation.

The Oder, rising on the frontiers of Moravia and Gallicia, bathes the walls of Breslau and Frankfort, receives many tributaries, and after a general north-north-west course of 350 geographic miles, flows past Stettin, where it divides into four branches, which discharge themselves into a large lake called the Grosse Haff; this again communicates with the Baltic by three channels, which form the two level wooded islands of Usedom and Wollin.

The Stettiner Haff, one of those remarkable shallow fresh-water lakes which line this coast, has an area of 180 square miles; in the eastern half the general depth is about 18 feet, and it is here that the passage lies from Stettin to the sea at Swinemünde, a distance of 39 miles by an intricate navigation, but carrying a depth of 12 feet water throughout.

Swinemünde is a small town, of 4000 inhabitants, but important from its situation at the mouth of the Swine. Since the year 1817 the harbour has been much improved by removing the bar and running out piers, which have secured a depth of 21 feet up to the town; there is a light on the eastern jetty head.

At Jershöft the cliffs are about 70 feet high, and here is exhibited a revolving light 165 feet above the sea, visible from 18 to 20 miles in clear weather. The coast from this point convexes to the northward for 66 miles as far as Rixhöft, a cliff 170 feet high, and the northernmost point of Prussian Pomerania. At

Ramkal, about 25 miles to the eastward of Jershöft, between the Gardener and Leba See, the hills rise to a height of 360 feet. From Rixhöft the land turns abruptly to the south-east and forms an extraordinary tongue of low sand, 18 miles long by $\frac{1}{4}$ mile broad, terminating in the well-known Hela of Danzig, marked by a revolving light 130 feet high.

Rixhöft and Cape Brüster Orth are the boundaries of the gulf bay of Danzig, 33 miles deep and 100 miles in circuit. At its outer part this bay has a depth of water of 60 fathoms, gradually decreasing to 30 fathoms, which it preserves to within less than 4 miles of the beach in the very bight of the bay, and, yet more singular, to within half a mile of Hela Point, which, therefore, although its surface is barely a few feet above the water, rises almost precipitously from a depth of 200 feet—thus having the steep sides and ridge-like form which characterize the North Sea banks: here, however, it will be remembered, there is no stream or tide.

Danzig, or Gdansk, a first-class fortress, and the chief port of Prussia, stands on the left or south bank of the Vistula or Weichsel, about $3\frac{1}{2}$ miles from its outlet at Weichselmünde, in the south-west corner of the Gulf. This is the well-known great mart of Prussian trade in corn, wool, timber, flax, and hemp. The exports of wheat are greater than from any other port in the world; and in 1843 not less than 1470 vessels arrived, and as many departed, from the port, one-third of which, or 576, were bound to Great Britain. Here are yards and slips for building, a royal school of navigation, and an observatory. Population, 65,000.

The Vistula, Wisla (Polish), Weichsel (German), one of the chief European rivers, and the principal river of Poland, rises at the northern foot of the Carpathian mountains near the frontier of Bohemia and Gallicia, and not far from the sources of the Oder. It flows by the ancient capital Cracow, Warsaw, and Thorn, and after a course of 500 miles in a general north direction, during which it receives numerous tributaries, including the Bug, its main branch passes Danzig and falls into the Baltic at Weichselmünde. The Vistula becomes navigable by large barges at Cracow, 430 miles from the sea, and it is the great channel for the conveyance of the productions of Poland to the Baltic.

At 20 miles to the eastward of Danzig commences another of those remarkable physical features so peculiar to this coast, the Frische Haff, a shallow fresh-water lake, its depth in no part (we learn from the chart before us) exceeding 12 feet, and only separated from the sea by a narrow, low, sandy ridge or *nehrung*, 38 miles long by less than 1 mile broad. The extreme length of this haff from Elbing on the south-west to the mouth of the

Pregel, near Königsberg, in the north-east, is 50 miles, and its average width 5 miles, comprising an area of 250 geographic miles. At the north-eastern extremity of the nehrung is an opening to the sea by a narrow strait or gat, 12 feet deep and half a mile wide, which is said to have been formed by an inundation of the haff in the beginning of the sixteenth century; on its opposite or north-eastern side stands the modern town and harbour of Pillau, which, owing to the shallowness of the haff, thus becomes the port of Königsberg, about 22 miles to the eastward, and Elbing 35 miles to the south-west, both within the lake. At this thriving little port, with 4000 inhabitants, vessels of heavy burden unload or lighten of a part of their cargoes. In the year 1843, 1560 ships entered, and 1552 sailed, including those for Elbing and other places on the haff: 430 of these were British.

Königsberg, the capital of Prussia Proper, with a population of upwards of 65,000, is situated on the small river Pregel, which falls into the north-eastern angle of the Frische Haff, about 4 miles below the city. Its chief trade is in corn, hemp, and flax. Here is a university and an observatory, which latterly has attained deserved celebrity from the astronomical observations of Professor Bessel. The port of Elbing, with its 25,000 inhabitants, and a flourishing trade, Frauenberg, the burial-place of Copernicus, and Braunsberg, with a population of 10,000, lie on the southern shore of this haff.

It is on the sea-shore of this long narrow nehrung, and along the coast as far as Cape Brüster Orth, that amber is found in such large quantities. It is a royal monopoly, and the beach strictly watched to save pilfering. Much of it is obtained from digging the ground at some distance from the sea, as well as that thrown up by the waves, and especially at Gross Hubenicken, about 4 miles south of Cape Brüster Orth.

From this Cape, where are two fixed lights, the higher 143 feet above the sea, the coast trends east for 18 miles to Cranz, whence begins a third, and the largest, of these remarkable low, narrow, sandy tongues or nehrungs, which separates another large fresh-water lake, called the Curische Haff, from the sea. It extends in a N.E. by N. direction to Memel, a distance of 52 miles in length, by 1½ mile in average breadth; this strip of land is almost entirely destitute of vegetation, but has a few hamlets on it. The Curische Haff is about 53 miles long, with an average width of 9 miles, and contains an area of 470 geographic square miles; it is shallow, the bottom is very irregular, and the navigation precarious. It receives the waters of the three small streams, Dange, Minge, and Memel. Labiau, with 3000 inhabitants, on its south shore, is the only place of any importance on

its banks. At its north-eastern extreme it is connected with the sea by Memel Deeps, a passage about 300 yards wide, and 12 feet deep; this forms the anchorage and port of Memel, which stands on its eastern shore.

Perhaps the most singular feature connected with these large fresh-water lakes is the rapid descent of the bank almost immediately outside the low sand ridge which separates them from the sea. For many miles into the interior of this part of Prussia the country is quite flat, and this level it preserves to the nehrung or sand-ridge, when it abruptly falls (in the bight of the Gulf of Danzig, for instance) 10 fathoms at 1 mile, 20 fathoms at 2 miles, and to 40 fathoms at only 5 miles off-shore; and the same remark holds good off the northern part of the Curische Haff.

It is difficult to imagine a ridge of sand similar to these nehrungs; but to those acquainted with the eastern coast of England, if they could picture to themselves the low sandy point of Landguard in Suffolk, extending from Harwich to Yarmouth, at a distance of from 10 to 20 miles off-shore, or the sands which line the coast of Norfolk permanently raised above water, it would give some notion of the Curische nehrung in its extent of 50 miles.

Memel, the most northern town in the Prussian dominions, situated at the north-eastern extremity of the Haff, has about 9000 inhabitants, and is the central point of the Baltic timber trade, the produce of the forests of Lithuania. The arrivals in its port, in 1843, were 733 ships of 132,000 tons burthen, of which about 70 vessels were British. The channel into the harbour is buoyed, and has on its north-eastern side a light at 98 feet above the sea. At 12 miles further north we reach the Russian frontier at Polangen.

Such, then, is the description of 600 miles of the sea-coast of Prussia, in which we may seem to have entered into far too much detail; but when we remember that it is only now for the first time we have an accurate delineation of this coast—that its headlands, harbours, and remarkable haffs are only now correctly represented—we may perhaps be pardoned for a desire to enrich our Journal with accurate geographic data which are not to be found elsewhere. A few words on the nature of the survey, and on the peculiar features of the Baltic Sea, will close our notice.

The Baltic is an internal, or mediterranean sea, of very irregular figure, which occupies, as it were, the centre of northern Europe: from Swinemünde, at the entrance of the Stettiner Haff, about the most southern point, to Torneo, in the north, its length is 770 geographic miles; while its width, from Karlscrona to Memel, is not less than 180 miles. Its whole area, including the

gulf, is about 125,000 square miles geographic, or little less than the North Sea, which may be taken in round numbers at 150,000 square miles. But the basin of this sea—that is, the surface it drains—is of vast extent. On the south, as we have seen, it receives by the Oder and Vistula the drainage of countries on the frontier of Bohemia and Gallicia, upwards of 300 miles direct distance from its shores. On the east the Düna and the Niemen extend nearly an equal distance; while round the Gulfs of Finland and Bothnia the watershed is about half this distance from its shores; from the latter innumerable mountain torrents rush into the sea, which altogether is said to receive the waters of 250 streams. Its basin thus appears to be nearly as extensive as that of the Black Sea, and may be taken roughly at 550,000 square miles—between four and five times the area of the Baltic, or more than one-fifth of the surface of Europe.

This quantity of fresh water naturally decreases the saltness of the Baltic, which is found to be in the proportion of 40 to 75 of the same quantity of water in the North Sea. Its comparatively small depth may also be partly attributed to the same cause, as the rains bring down large quantities of detritus, which is gradually spread over its bed. In no part of the southern portions of the Baltic, as far as the parallel of Memel, does the depth exceed 50 fathoms, while to the westward of Bornholm it never reaches 30 fathoms. In the more northern parts it deepens to 100 and 120 fathoms.

This brackish state of the water, its little depth and want of tide, will account for its shores and straits being covered with ice for four months of the year, which is a great interruption to navigation. Yet, although the Baltic has no tides, it is subject to periodical risings of the waters to the extent of 2 and 3 feet, which is attributed by Schulten to the changes in the atmosphere, similar to the *seiches* on the Lake of Geneva. But this phenomenon has hardly yet been explained in a satisfactory manner.*

The book of views, &c. forming part of the *See-Atlas*, has for a frontispiece a sheet of the various lighthouses along the coast, admirably engraved, and so grouped as to form quite a pretty picture. The views are chiefly taken by Captain Will, at distances of 8 and 16 miles off-shore, and are very characteristic of the low line of coast, where a town is known by the sails of the

* Might we venture to suggest that, as far as the southern shores of the Baltic extend, it would form a fit *pendant* to this beautiful survey, if the Prussian officers would carry a series of levels, and place well-defined marks at the water-level along some of their cliffs. The isle of Rügen at Arkona, Jershöft, Rixhöft, and Cape Brüster Orth, would seem to offer excellent spots for such a work. A few years' accurate observations, in concert with good meteorological data, would, we doubt not, soon throw some light on these periodical risings of the Baltic.

windmills and the steeples of the churches rising in the horizon from the sea when no land is visible. Before the publication is complete we hope to see both lighthouses and views transferred to the charts themselves, where they would be far more useful.* Special plans, too, of the different ports, as Stettin, Danzig, Pillau, and Memel, on a very much larger scale than the coast charts, with brief sailing directions annexed, might with great advantage be inserted in the blank spaces. A chart should if possible contain everything that the mariner may require without having occasion to turn to a second document.

The soundings laid down in the sailing charts are, we presume, merely temporary tracks till more leisure can be afforded for a thorough close and systematic sounding of this sea, which absolutely demands it; when, for instance, we meet with a Middle Bank such as that between Oland and Rixhöft, with only 7 fathoms' water in one spot, at a distance of 50 miles from the nearest land, it is not enough to leave such a space of shoal water, upwards of 10 miles square, with but a single track of sounding over it. Did such a bank exist in the middle of the North Sea, not a cable's length of it in any direction would be allowed to escape without a cast of the lead upon it. In deep water such close sounding is hardly requisite; but we see here blank spaces upwards of 40 miles square, and within 20 miles of the Prussian coast at Brüster Orth without a single sounding! This is not safe, nor is it just towards sailors. From some experience in coast and deep sea sounding, we would venture to recommend, as far as possible, to sound in lines or sections at right angles to the coast—such a mode of sounding is far more likely to detect shoals or irregularities in the bottom of the sea than any other, as they usually assume a direction parallel to the shore, and always so in a tide's-way. We are aware that this plan is difficult in a sailing vessel, but with attention much may be done. Let us hope that when these charts are finished, the rest of this sea, so important to mariners, may be thoroughly examined in a steamer, which will be found a more efficient and a far more economical mode of surveying than in a sailing vessel, and will do more than double the work. Better practice for the young cadets at the naval school at Danzig can hardly be imagined; and their employment in the survey already before us is a proof that they are deserving of such encouragement.

We may also, perhaps, be permitted to suggest the employment of a small vessel with a taunt mast, say 100 feet, as a stationary beacon, and that her position be once carefully fixed

* As, for instance, in the Danish chart of the Skaggerrak and other beautiful charts, for which the Geographical Society is indebted to its indefatigable honorary member Captain Zahrtmann, of the Danish Royal Navy, and Hydrographer.

either by angles from the shore or by astronomical observations —and then, that the sounding vessel describe a circle round her of about 9 miles diameter, keeping within the limit of the horizon, and measuring the distance from the pivot vessel with the *Rochon,* or micrometer telescope. This method is simple, expeditious, and far more correct than continually fixing one's position at hazard by astronomical observation in a climate where refraction plays such tricks that it is difficult to measure a common altitude of the sun within some miles. In proof of this, hear what the Prussian surveyors say themselves:—

'At each observation the inclination of the horizon towards the visible horizon was ascertained by means of the dip-sector after a due series of observations, and taken into account. There was a constant difference between the dip taken by observation and that given in the tables; the former was generally less, and upon some of the early voyages there was even a difference of 7 minutes! Had this instrument failed, all observations on the altitude of the sun would have been liable to mistake, which by its use was remedied.'—p. 9.

A doubtful remedy, we fear; however, there was no alternative: yet we must take warning by it to be careful how we trust to meridian altitudes of the sun in these seas, and would recommend the navigator to depend more upon latitude by the mean of several stars by night, when the atmosphere is less troubled.*

We are glad to see that the deep-water soundings are given in fathoms, and not, as we have lately seen elsewhere, in feet or *mètres.* Why should not all nations agree in the use of the fathom for recording deep-water soundings? Charts should speak a universal language; the fathom is a measure which all have:—the French have their *toise,* the Spaniards and Portuguese their *braza,* the Germans their *faden,* the Dutch *vadem,* the Danes and Norwegians the *favne,* and the Swedes the *famn;* all pretty nearly the same measure: then why puzzle ourselves with the French *pied,* or indeed *mètre;* or the Dutch *palmen* of 4 inches, to measure the depths of the ocean?

We rejoice, too, to see that *magnetic* compasses and magnetic bearings are given on the charts. This is as it should be; the use of *true* meridian compasses and true bearings, &c., is both unseamanlike and puzzling; all should be magnetic. What does

* Captain W. F. W. Owen found on one occasion, in observing a star's altitude, a change of 4′ in the place of the sea-horizon, within the tropics, soon after sunset. Mr. Fisher observed a variation in the place of the horizon of 18′ in the arctic regions. In summer the ice-horizon was elevated, not depressed; in the winter it was depressed several minutes. (*Appendix to Capt. Parry's Voyage in* 1821-3, p. 187).—A table for correcting the apparent place of the sea-horizon for the difference of temperature of the sea and the air, according to the height of the eyes, would be useful; but there are scarcely any data for the construction of such a table, and the theory itself appears not to be complete.—*Raper's Practice of Navigation,* 2nd Edit., p. 40. An excellent and thoroughly practical work.

the sturdy Danziger who runs a cargo of timber or corn to the Thames, or the equally hardy collier from Newcastle, who carries a cargo of coals to Stettin, know of the *true* meridian? and yet it is for persons of this class that charts and sailing directions must and ought to be prepared. All finely-dotted outlines of shoals, all small figures and faint impressions of soundings which look pretty in the closet, all *true* meridian compasses and bearings, are but the veriest mockery to the sailor, who, perhaps, in a gale of wind is often obliged to lay off his track by night, probably by the light of a half-trimmed lamp! Charts and sailing directions cannot be too clear, brief, plain, and practical, and such as a sailor in the hour of need may turn to with confidence. And such, we feel assured, will be the sailing directions for the Baltic Sea—a fit companion to the charts before us, and both worthy of the Government under whose fostering care they are published, and an honour to the countrymen of a Ritter and a Humboldt.

II.—*Report on an Exploration of the Country lying between the Missouri River and the Rocky Mountains on the line of the Kanzas and the Great Platte Rivers.* By Lieut. J. C. Fremont, of the Corps of Topographical Engineers. Washington. *Printed by order of the United States' Senate.* 1843. Communicated by Thomas Falconer, Esq., of Lincoln's Inn.

THIS survey includes a considerable district between 39° and 43° N. lat., and 96° and 111° longitude W. It was undertaken by the order of the Government of the United States, with the ultimate object of erecting forts for the protection of traders across the country lying between the state of Missouri and the Pacific Ocean. The work of the expedition commenced at Choteau's trading-post, on the right bank of the Kanzas, and ten miles above its mouth, in long. 94° 39′ 16″ W., and lat. 39° 5′ 57″ N.: the elevation above the sea at this point being 700 feet. The instruments carried,—unfortunately only part of the distance,—were a circle and sextant of Gambey of Paris, a sextant of Troughton, two chronometers and barometers. One of the chronometers became useless; and it is to be regretted that Lieutenant Fremont did not himself occasionally rate the one he carried with him. The rating of a watch-dealer at New York may be perfectly correct, but no traveller wishing to determine correctly the longitude of places by such an instrument could entirely depend on the rate at starting. The survey of Mr. Schomburgk in Guayana is an example to all travellers of attention to accuracy in this respect, and of what they can accomplish, in the midst of great difficulties, by care and habitual correctness. The party were fully under weigh to the west on the 10th of June, 1843, taking